REMARKS

This is meant to be a complete response to the Office Action mailed July 25, 2006. In the Office Action, the Examiner stated that restriction to one of the following inventions was required under 35 U.S.C. 121:

I. Claims 1-7 and 10-13 (in part), drawn to a nucleic acid encoding heparin synthase of SEQ ID NOS: 13 or 15, classified in class 536, subclass 23.2.
II. Claims 8, 9 and 14-18, drawn to methods for producing heparin polymer using heparin synthase, classified in class 435, subclass 101.
III. Claims 10-13 (in part), drawn to a nucleic acid encoding heparin synthase of SEQ ID NOS: 2, 4, 6, 25, 27 or 34, classified in class 536, subclass 23.2.

Applicant respectfully elects Invention II, and claims 8 and 14-18 readable thereon (claim 9 has been canceled herein, without prejudice, as it referred to canceled claim 1).

Also in the Office Action, the Examiner stated that for each of inventions I-III above, restriction to one of the following is also required under 35 U.S.C. 121:

(A) SEQ ID NO:1 or a sequence encoding SEQ ID NO:2.
(B) SEQ ID NO:3 or a sequence encoding SEQ ID NO:4.
(C) SEQ ID NO:5 or a sequence encoding SEQ ID NO:6.
(D) SEQ ID NO:12 or a sequence encoding SEQ ID NO:13.
(E) SEQ ID NO:14 or a sequence encoding SEQ ID NO:15.
(F) SEQ ID NO:24 or a sequence encoding SEQ ID NO:25.
(G) SEQ ID NO:26 or a sequence encoding SEQ ID NO:27.
(H) SEQ ID NO:33 or a sequence encoding SEQ ID NO:34.

Applicant respectfully elects Invention (A). However, Applicant respectfully traverses the restriction requirement between Inventions (A), (B) and (D)-(G). Applicant also traverses the restriction requirement as applicable to Inventions (C) and (H); however, for the sake of expediting issuance of a patent from the subject application, claims related to Inventions (C) and (H) have been canceled herein, without prejudice.

First, the Examiner's attention is directed to the parent application, US Serial No. 10/142,143. In the parent application, the Examiner also required restriction between the sequences listed herein as Inventions (A)-(C). Applicant respectfully traversed the rejection and petitioned the Commissioner for review of the restriction requirement. In a Decision mailed on May 31, 2006, the Director stated that Applicant's Petition under 37 C.F.R. 1.144 was granted-in-part and the sequences of Inventions (A) and (B) of the subject application would be examined together in the parent application. Therefore, Applicant respectfully submits that at the very least, the restriction requirement regarding inventions (A) and (B) is improper, and that such sequences should be considered together.

Regarding Inventions (D) and (E), such sequences are related to soluble truncated mutants of Invention (A) that were **created by the Applicant**. The Specification provides **complete guidance** on how the truncations were constructed - see for example, paragraph [0082] of the Specification as

originally filed. Such truncated mutants are **100% identical** to residues 46-617 and residues 78-617 of Invention (A), respectively, and such truncated mutants retain the same function as Invention (A). The only difference between Inventions (A), (D) and (E) are that the first 46 or 78 amino-terminal residues of Invention (A) are not included in Inventions (D) and (E), respectively, and that a Methionine start codon has been created at residues 45 and 77 of Invention (A) to provide Inventions (D) and (E), respectively.

Regarding Inventions (F) and (G), such sequences are related to single action mutants of Invention (A) that were also **created by the Applicant**. The Specification provides **complete guidance** on how these mutants were constructed - see in particular paragraphs [0086] through [0093] of the substitute Specification filed herewith. Inventions (F) and (G) are each **greater than 99% identical** to Invention (A), and Inventions (F) and (G) each differ from Invention (A) in **only two amino acids** (out of 617 amino acids): in both, two negative acidic residues were changed to neutral residues. The reasons for making such mutations, including the reasons why these residues were chosen, are clearly outlined in the section of the Specification outlined above.

Therefore, as the Director held in the parent application that Inventions (A) and (B) were to be examined together, Applicant respectfully submits that for the same reasons, Inventions (D)-(G) should also be examined with Inventions (A) and (B). Thus, Applicant respectfully requests reconsideration

and withdrawal of the restriction requirement as applicable to Inventions (A), (B) and (D)-(G).

CONCLUSION

This is meant to be a complete response to the Office Action mailed July 25, 2006. Applicant respectfully submits that claims 8 and 14-18, as now amended, are patentable over the art of record and are in a condition for allowance. Favorable action is respectfully solicited.

Should the Examiner have any questions regarding this Amendment, or the Remarks contained therein, Applicant's representative would welcome the opportunity to discuss the same with the Examiner.

Respectfully submitted,

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